

# Study Notes: CBSE Class 8<sup>th</sup> Physics (Some natural phenomena)

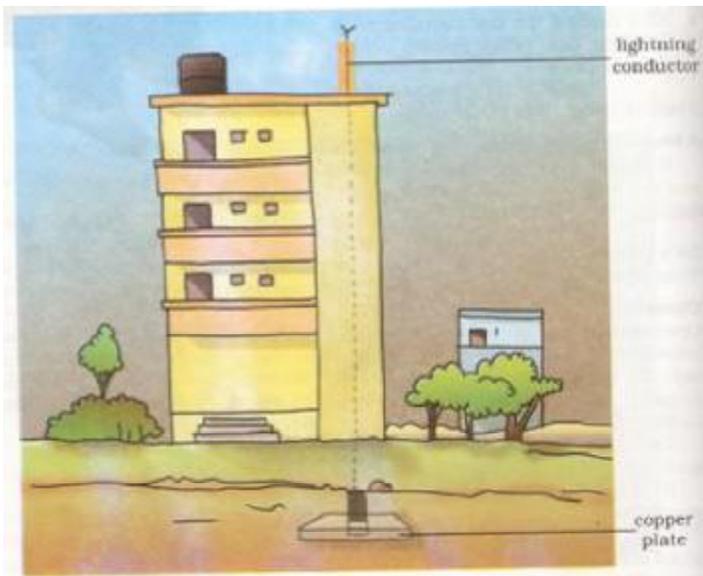
## Contents:

1. Lightning, static charges and its causes, methods to protect, lightning conductor
2. Earth quake and some basic definitions, seismograph and methods of protect
3. In our day to day life, it is very essential that we pay a heed to protect our self from natural calamities. Here, we would study about two natural phenomenon's that cause mass scale destruction namely - lightning + earthquake
4. **Lightning** is an electric spark at a huge scale. It is caused by accumulation of charges in the clouds. To understand the concept of lightning. We need to understand charges
5. When a plastic comb is rubbed with dry hair, it acquires a small charge. These objects are called **charged objects**. It is a convention to call the charge acquired by a glass rod when it is rubbed with silk as **positive** and other charge to be **negative**. It has also been established that like charges repel each other and unlike charges attract.
6. The electric charges generated by rubbing is called **static charge**, but when set in motion, they constitute an electric current.
7. A device used to test whether a body is charged or not is known as **electroscope**. Electric charge can be transferred from a charged object to another through a metal conductor.
8. When a charged body loses its charge to earth, it is said to be **discharged**. The process of transferring of charge from a charged body to earth is called earthing. **Earthing** is provided in buildings to protect us from electrical shocks due to leakage of electrical current.
9. During development of thunderstorm, the air current move upward while water droplets moves downwards. The positive charges collect near the upper edges of the clouds and negative charges near lower edges. There is an accumulation of positive charge near the ground also. When magnitude of accumulated charge become very large, air no longer resist its glow. Thus, negative and positive charges meet producing bright streak of bright light and sound called **lightening**. This process is also called as **electric discharge**.
10. A house or a building is a safe place. While traveling in a vehicle, stay inside only. Open vehicles, open fields, tall trees, etc... are dangerous. Carrying an umbrella is also not a good idea. You can also lie down as shown below, to make yourself target to the struck.



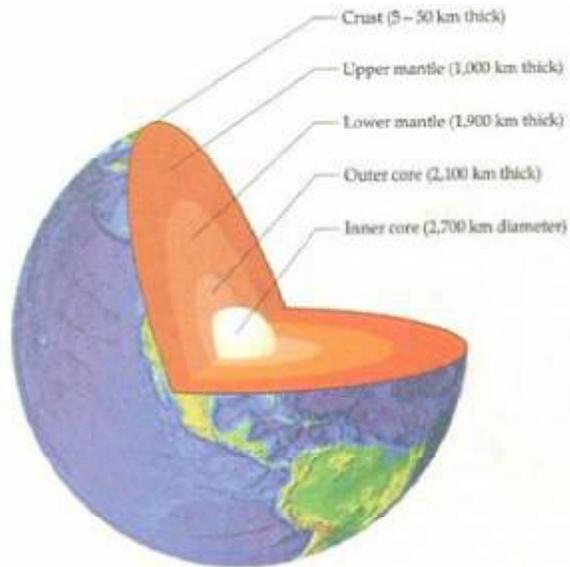
**Fig (1)**  
**(Sitting posture during lightening)**

- **lightning conductor** is a device used to protect buildings from the effect of lightening. A metallic rod, taller than the building, is installed in the walls of building during its constructions. One end of rod is kept out in air and deep buried in ground. A simple lightening conductor is as shown below:-



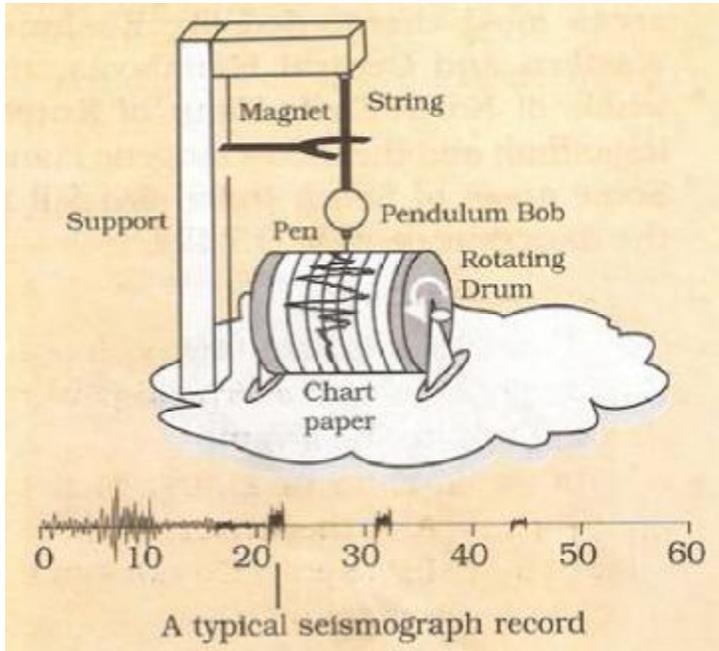
**fig (2)**  
**(Lightning conductor)**

- Earthquake is a sudden shaking of the earth which lasts for a very short time. Major earth quake are quite less frequent and cause major damage.
- The structure of earth is as shown below:-



**Fig (3)**  
**(Structure of earth)**

- The outermost layer of earth is fragmented. Where each fragment is called **plate**. These plates are in continual motion. Due to collision or brushing past each other, these plates produce disturbance inside the earth, producing an earthquake. Tremors are also caused by volcano erupts, meteors hitting earth or underground nuclear explosion.
- Since earthquakes are caused by the movement of plates, the boundaries of the plates are the weak zones where earthquake are more likely to occur. These zones are called **seismic or fault zone**.
- The power of an earthquake is measured on **Richter scale**, which is non - linear scale. Generally a magnitude of higher than 7 is destructive.
- The earthquake tremors produce wave on the surface of earth called **seismic waves**. These waves are recorded by an instrument called seismograph. The instrument is a vibrating rod or a pendulum which starts vibrating when tremors occur. A pen is attached to the vibrating system to record seismic waves which gives an estimate of its power. A simple seismograph is as shown below:-



**Fig (4)**  
**(Seismograph)**

- To protect yourself from harmful effects of earthquake at home,
  1. Stay on your bed and cover face with pillow.
  2. Take shelter under the table.
  3. Stay away from objects that might fall on you
- If you are outdoors
  1. Find a clear spot and deep to ground
  2. While traveling in vehicles, drive vehicle slowly to a clear spot.